

1c430 U.S. PTO

12-05-00

414 PCT/PTO 4 DEC 2000

PCT

FORM PTO-1390 (REV 10-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER 802
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371			U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 09/701927
INTERNATIONAL APPLICATION NO. PCT/EP00/03872	INTERNATIONAL FILING DATE April 28, 2000	PRIORITY DATE CLAIMED April 30, 1999	
TITLE OF INVENTION A PROCESS AND DEVICE FOR ATTACHING LABEL JACKETS TO OBJECTS			
APPLICANT(S) FOR DO/EO/US Eiban Gunter, Hermann Englbrecht, Erich Eder			
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:			
1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.			
2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.			
3. <input checked="" type="checkbox"/> This is an express request to promptly begin national examination procedures (35 U.S.C. 371(f)).			
4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).			
5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))			
a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).			
b. <input type="checkbox"/> has been communicated by the International Bureau.			
c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).			
6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).			
7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))			
a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).			
b. <input type="checkbox"/> have been communicated by the International Bureau.			
c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.			
d. <input type="checkbox"/> have not been made and will not be made.			
8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).			
9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).			
10. <input type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).			
Items 11 to 16 below concern document(s) or information included:			
11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.			
12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.			
13. <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment.			
<input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.			
14. <input type="checkbox"/> A substitute specification.			
15. <input type="checkbox"/> A change of power of attorney and/or address letter.			
16. <input checked="" type="checkbox"/> Other items or information:			
PCT Form 101			
EPO Form 103.1			
PCT Form 220			
PCT Form 210			

page 1 of 2

"Express Mail" mailing label number EL334182288US  
Date of Deposit December 4, 2000  
I hereby certify that this paper or fee is being  
deposited with the United States Postal Service  
"Express Mail Post Office to Addressee" service





522 Rec'd PCT/PTD 16 JAN 2001

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Eiban Gunter et al ) International Appln. No.  
Serial No. 09/701,927 ) PCT/EP00/03872  
Filed: December 4, 2000 ) International Filing Date  
For: A PROCESS AND DEVICE FOR ) April 28, 2000  
ATTACHING LABEL JACKETS )  
TO OBJECTS )

LETTER RE: MISSING PARTS OF APPLICATION

Hon. Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

Sir:

Further to the recent filing of the subject patent application, for which the formal documents were filed in blank, enclosed for filing is the original executed Declaration and Power of Attorney, referenced to the subject application per the enclosed Notice copy.

Also enclosed is a check in the amount of \$130.00 for payment of the late-filing of this Declaration and Power of Attorney. If any additional amount is required, please charge the please charge the cost thereof to our account No. 20-1111.

Respectfully submitted,

Eiban Gunter et al, Applicants

Date: Jan 11, 2001

By

Richard B. Hoffman, Reg. No. 26,910  
Attorney for Applicants

Tilton, Fallon, Lungmus & Chestnut  
100 S. Wacker Drive, Suite 960  
Chicago, Illinois 60606-4002  
Telephone: 312/456-8000

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:  
Commissioner of Patent and Trademarks, Washington  
D.C. 20231 on 1/11/01

(Date of Deposit)

Richard B. Hoffman

Name of applicant assignee, or  
Registered Representative

Signature

Date of Signature

01/22/2001 UEDUVIJE 00000060 09701927

01-FC:198 -130.00-OP

Adjustment date: 02/01/2001 TVD111  
01/22/2001 UEDUVIJE 00000060 09701927

01-FC:198 -130.00-OP

Repln. Ref: 02/01/2001 TVD111 0008250400  
DAH:201111 Name/Number:09701927  
FC: 704 \$130.00 CR

525 Rec'd PCT/PTO 04 DEC 2000

PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Eiban Günter et al ) International Appln. No.  
 ) PCT/EP00/03872  
 Serial No. )  
 ) International Filing Date:  
 Filed: ) April 28, 2000  
 )  
 Title: A PROCESS AND DEVICE FOR )  
 ATTACHING LABEL JACKETS )  
 TO OBJECTS )

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents  
 and Trademarks  
 Washington, D.C. 20231

Sir:

In connection with the subject patent application, please  
 enter the following amendment.

IN THE SPECIFICATION:

Page 1, after the title, please delete "Description" and  
 add a centered heading as follows: --Field of the Invention--;

Page 1, line 1, after "products", please add --, such as  
 bottles--;

Page 1, after the first paragraph, please insert a new  
 centered heading as follows: --Background of the Invention--;

Page 1, after the third full paragraph, please add a  
 new centered heading as follows: --Summary of the Invention--;

Page 1, please delete the last paragraph in its  
 entirety.

"Express Mail" mailing label number EL334182288US  
 Date of Deposit December 4, 2000

I hereby certify that this paper or fee is being  
 deposited with the United States Postal Service  
 "Express Mail Post Office to Addressee" service  
 under 37 CFR 1.10 on the date indicated above  
 and is addressed to the Commissioner of Patents  
 and Trademarks, Washington, D.C. 20231

Marie Lentz

(Typed or printed name of person mailing paper or fee)

Marie Lentz  
 (Signature of person mailing paper or fee)

RECEIVED  
 DEC 4 2000  
 PCT/PTO

Page 3, please delete line 11 in its entirety, and insert a new centered heading as follows: --Brief Description of the Drawings--;

Page 3, line 12, please delete "variant".

Page 4, after description of Figure 10, please insert a new centered heading as follows: --Detailed Description of the Preferred Embodiment--.

Page 5, line 1, please change "start" to --star--;

Page 5, line 10, after "The", please insert --above--;

Page 5, line 10, after "cross", please insert --bar--;

Page 5, line 11, please delete "beam".

Page 6, line 12, please change "back side" to --backside--; same page and line, please change "or" to --and--.

Page 7, line 11, please change "supported" to --support--.

Page 8, line 6, after "hole," please add --22,--.

IN THE CLAIMS:

At line 1, delete "Claims", and substitute --We Claim:--

Please amend the claims as follows:

1 (Amended). Process for attaching a label jacket to objects, such as bottles or similar items, [where] comprising the steps of seizing a label jacket [is seized] by a separating jaw unit by its forward margin [and pulled] for pulling in an axial direction over an object, [characterized in that] holding the object prior to the pull-over application[, is held] by the area

of its mantle surface, by positive [and/]or friction lock, [the] initiating the pull-over process [is initiated], temporarily releasing the holding device on the mantle surface [is temporarily released] as soon as the separating jaw unit at least partially surrounds the object over its mantle surface, and, at the latest when the desired adhesion height of the label jacket on the object has been reached, seizing the latter object [is again seized] by the area of its mantle surface, which is now covered with the label, and [as a result] thereby affixing the label [becomes affixed] in a manner so it cannot slip, [while] and pulling off the separating jaw unit [is pulled off].

2 (Amended). Process according to Claim 1, [characterized in that] and causing the hold on the mantle surface of the object to occur[s] at a certain height position, first with positive [and/]or friction lock, briefly releasing the holding device as soon as the forward margin of the label jacket approaches this height position[, the holding device is then briefly released] with simultaneous axial support of the object, and holding the object, after the passage of the height position, [the object is held] in such a manner that the label jacket can then continue to be pulled over axially with respect to the object until the adhesion height is reached.

3 (Amended). Process according to Claim 1 or 2, [characterized in that] and causing the hold of the object to occur[s] at two places of its mantle surface with separation intervals in the axial direction, and alternately controlling the

two axially displaced holding devices to rise, during the pull-over application of the label jacket, [can alternately be controlled to rise,] in such a manner that the object is at all times subject to or guided by at least one holding device.

4 (Amended). Process according to [at least one of the preceding claims, characterized in that] Claim 1 or 2, and controlling the holding device of the object, during the axial pull-over application of the label jacket, [is controlled] as a function of the operating movement of the spreading jaw unit [and/] or of the transport movement of the object.

5 (Amended). Process according to [at least one of] Claim[s] 1[-4, characterized in that] or 2, wherein the label jacket consists of a stretchable film hose material with smaller internal diameter than the external diameter of the object, [in that] and the further steps of, before the pulling over, [it is] elastically extend[ed]ing[, the stretchable film hose material at least at is forward margin advancing in the axial direction, by the spreading jaw to a value in excess of the external diameter, and releasing the elastic extension [is released] of the stretchable film hose material after the adhesion height has been reached.

6 (Amended). Process according to [at least one of] Claim[s] 1[-4, characterized in that], wherein the label jacket consists of a film hose material which is shrinkable when exposed to heat, which has an internal diameter which is equal to or larger than the external diameter of the object, and [which] the

further step of, after the adhesion height has been reached, [is] at least partially shrink wrapp[ed]ing the film hose material on the object, before the holding device of the label jacket and of the object is released.

7 (Amended). Process according to Claim 6, [characterized in that] wherein, after [the] releas[e]ing [of] the holding device, a complete shrink wrapping occurs.

8 (Amended). Process according to [at least one of] Claim[s] 1[-7, characterized in that], and continuously transporting the object, at least during the pull-over application of the label jacket[, is continuously transported, preferably in a circular path].

9 (Amended). Device for the attachment of a label jacket (E) to objects (F), such as bottles or similar items, comprising in combination [with] at least one spreading jaw unit (50) for seizing the label jacket at its forward margin and axial pull-over application of the label jacket by means of the spreading jaw unit onto an object, [particularly for using the process according to Claim 1, characterized in that the spreading jaw unit (50) is associated with a] and at least one controllable holding device (20) for seizing the object (F), with positive [and/]or friction lock, in the area of its mantle surface.

10 (Amended). Device according to Claim 9, [characterized in that] wherein said at least one spreading jaw unit (50) and said at least one holding device (20) are associated with a continuously drivable conveyor (3) for



transporting the object (F)[, and in that they are moved synchronously with the latter].

11 (Amended). Device according to Claim 9 [or 10, characterized in that the], wherein said holding device (20) seizes, after the pull-over application of the label jacket (E), the area of the mantle surface of the object (F) that has been covered[, in the case of bottles preferably in the middle section, particularly in the section having the largest external diameter].

12 (Amended). Device according to [one of] Claim[s] 9[-11, characterized in that the], wherein said holding device (20) is constructed in the form of a clamp having two arms (20a, 20b) which can be moved in opposite directions.

13 (Amended). Device according to Claim 12, [characterized in that the] wherein said arms (20a, 20b) are appropriately adapted in their shape to the external contour of the object (F), matching the area that is seized[, and they preferably have a non-slip surface].

14 (Amended). Device according to Claim 12 [or 13, characterized in that the], wherein said clamp (20) is associated, as a function of the direction of movement of the spreading jaw unit (50) [and/] or of the transport direction of the object (F), with a controllable actuation device (21-26).

15 (Amended). Device according to [one of] Claim[s] 12-] 14, [characterized in that the] wherein said clamp (20) can be moved from a release position to a seize position, and vice

versa[, where it is preferred that the seize position is automatically controlled, and the release position is controlled by the actuation device (21-26)].

16 (Amended). Device according to Claim 15, [characterized in that the] wherein said actuation device (21-26) is constructed [in such a manner that] to have two different seize positions [are possible], where, in a first seize position between the object (F) and the clamp (20), a slit remains for pulling the label jacket (E) through, and in the [other] second seize position, [the] said clamp (20) is applied, without tolerance, [preferably] with a defined force of application, to the object (F) or the label jacket (E).

17 (Amended). Device according to [at least one of] Claim[s] 12[-16, characterized in that], wherein each said arm (20a, 20b) of said [the] clamp (20) is secured to its own shaft (19a, 19b), which is vertical with respect to the plane of transport, and these said shafts (19a, 19b) are separated from each other by an interval, which allows the free penetration of [the] said spreading jaw unit (50).

18 (Amended). Device according to [at least one of] Claim[s 9-]17, [characterized in that the] wherein said spreading jaw unit (50) is secured vertically with respect to the plane of transport of the objects (F), in such a manner that [it] said spreading jaw unit can be moved alternately in opposite directions[, particularly] by means of a reversible double-action

cylinder (34), and the operating movements are controlled, at least during some periods, by at least one radial cam (40, 41, 41b).

19 (Amended). Device according to [at least one of] Claim[s 10-18, characterized in that the] 17, wherein said conveyor (3) is a carousel-like revolving table, which can [preferably] be rotated about a vertical axis (30'), with several placement surfaces (4), which are evenly separated, for the objects (F), and each said placement surface is associated with a liftable and lowerable said spreading jaw unit (50) and a said clamp (20), where a vertical guide (32), which takes up [the] said spreading jaw unit (50), and said arms (20a, 20b) of [the] said clamp (20) bearing shafts (19a, 19b) are [preferably] arranged on the radially internal side of the circumferential path of [the] said placement surfaces (4).

20 (Amended). Device according to Claim 19, [characterized in that the] wherein said placement surfaces (4) are associated with controlled liftable and lowerable centering elements (14)[, particularly rings, and/or the top side of the placement surface is correspondingly adapted in its shape to the contour of the standing surface of the objects (F)].

21 (Amended). Device according to Claim 19 [or 20, [characterized in] that the], wherein said revolving table (3) is associated with a feed star wheel (5) and a delivery star wheel (6) with controllable grip elements to feed and deliver the objects (F), and [the] said spreading jaw units (50) are raised,

in the circumferential area from [the] said delivery star wheel to [the] said feed star wheel, from a bottom dead center position into the direction of a top dead center position.

22 (Amended). Device according to [at least one of] Claim[s] 9[-21, characterized in that the], wherein said spreading jaw unit (50) is constructed in the form of a nipper[, preferably with] having two internal jaws (51a, 51b), which can be swiveled horizontally in opposite directions in a controlled manner, and [which has] an application surface (53) for the forward margin of a label jacket (E), and [which has] two counter arms (52a, 52b), which are associated with [the] said internal jaws[, and which can be swiveled in opposite directions either towards each other or towards [the] said internal jaws, and where [the] said internal jaws can be brought in contact with friction lock with the internal side, and [the] said counter arms with the external side, of a label jacket.

23 (Amended). Device according to Claim 22, [characterized in that the] wherein said spreading jaw unit (50)[, which] can be actuated by means of control elements (70) which are secured to the circumferential path of [these] said spreading jaw units, and further said spreading jaw unit (50) can be moved by a peripheral cam (68) that can be swiveled, as desired, from a ready position into the spread position or vice versa.

24 (Amended). Device according to [one of] Claim[s] 19[-23, characterized in that], wherein two said revolving tables

(3, 3') are connected in parallel and [they] are supplied with a common, one-track feeding stream of objects, which is divided over said two revolving tables and which is again combined, behind [the] said revolving tables, to a one-track row.

Please add the following new claims:

25. Process according to Claim 8, wherein the object is continuously transported in a circular path.

26. Device according to Claim 10, wherein said at least one spreading jaw unit (50) and said at least one holding device (20) are moved synchronously with said object (F) by said drivable conveyor (3).

27. Device according to Claim 11, wherein the holding device (20) seizes said mantle surface area in the middle section of the object (F) having the largest external diameter.

28. Device according to Claim 13, wherein said arms have a non-slip surface.

29. Device according to Claim 15, wherein in the seize position said clamp is automatically controlled, and in the release position said clamp is controlled by said actuation device (21-26).

30. Device according to Claim 20, wherein said liftable and lowerable centering elements are ring members.

31. Device according to Claim 19, wherein the top side of said placement surface is shaped to the contour of the standing surface of the objects (F).

IN THE ABSTRACT:

Please amend the Abstract as follows:

[The invention concerns a] A process and a device for attaching a label jacket to objects, such as bottles or similar items, where a jacket label is seized by its forward margin by a spreading jaw unit and pulled in axial direction over the object, where the object, before the pull-over application, is held by the area of its mantle surface, by positive and/or friction lock, and once the pull-over process is started, the holding device on the mantle surface is temporarily released as soon as the spreading jaw unit at least partially surrounds the object at its mantle surface, and, at the latest before the desired adhesion height of the label jacket on the object is reached, the [latter] object[s] is again seized by the area of its mantle surface, which object is now covered with the label, [and] whereby in the process the label is affixed in a non-slip manner, [while] and then the spreading jaw unit is pulled off.

REMARKS

The claims have now been reviewed and amended for clarification, and to conform to U.S. practice. The specification has been given headings, and the Abstract has been revised. No new matter has been added.

It is respectfully submitted the application as amended above is now in condition for substantive examination on the

//

//


merits. If any claim or other fees are due by this Amendment,  
please charge our deposit account No. 20-1111.

Respectfully submitted,

Eiban Günter et al, Applicants

Date: Dec. 4, 2000

By

  
Richard B. Hoffman,  
Reg. No. 26,910  
Attorney for Applicants

Tilton, Fallon, Lungmus & Chestnut  
100 South Wacker Drive, Suite 960  
Chicago, Illinois 6060-4002  
Telephone: 312/456-8000

RECEIVED

12 / prts

09/701927

1

525 Rec'd PCT/PTO 04 DEC 2000

# A PROCESS AND DEVICE FOR ATTACHING LABEL JACKETS TO OBJECTS

## Description

The invention relates to a process and a device for the attachment of label jackets to products.

A corresponding machine is known from European Patent No. 0 584 516. This machine has a revolving table, with dishes that are arranged at regular intervals on a common sector of a circle, for the free standing uptake of bottles. On each one of these dishes, a roll of labeling hose, an installation for the separation of label jackets, and a pair of separating jaws that can be lowered and lifted for seizing the separated label jackets and to pull them over a bottle, are arranged in a manner so that they rotate.

The drawbacks of this construction design are the considerable cost and the fact that replacement of the numerous rolls of label hose is time consuming. Because of the free standing bottles, the speed of revolution and thus the production output are considerably limited. Furthermore, on the one hand, the evenness of the height of attachment of the label jackets to a multitude of bottles is unsatisfactory, and, on the other hand, the operating reliability is critical, especially when the external wall of the bottles are wetted with a fluid. These drawbacks are connected with the fact that a label jacket, at the time when the force of friction between the label and the bottle is greater than between the separating jaws and the label, stops the axial relative movement with respect to the bottle and adheres to it. The height of attachment of the individual jacket labels depends on the individual friction conditions and, therefore, it is not exactly defined. Moreover, the operating reliability is problematic when the separating jaws return to their original upper starting position, because there are still bottles on the support dishes.

The invention is based on the task of providing a process and a device with high fitting precision and operating reliability.

This process task in question is solved by the characterizing portion of Claim 1 and the device task in question is solved by the characterizing portion of Claim 9.

09/701927



According to the invention, the bottles are seized, before a label jacket is pulled over them, in the area of their mantle surface, until the separating jaw pair which holds a label jacket, coming from above, surrounds, in a manner which is known in itself, at least for a portion of the longitudinal extent of the bottle to be fitted. In the subsequent course of the operation, the holding device for holding the bottles by their mantle surface is temporarily released, and the label jacket is pulled by the separating jaw pair, with simultaneous support of the bottom of the bottle, to the desired final position, where the lowering movement of the separation jacket pair is then stopped, while the label jacket continues to be held at its lower edge with friction lock by the separating jaws. Then the bottle is again seized by a part of its mantle surface which in the meantime has been covered with the label jacket that has been pulled over it, where the label jacket is held by friction lock or pressed against the external side of the bottle. The separating jaw pair releases the hold grip on the forward lower margin of the label jacket only then, and it is then lowered completely under the standing surface of the bottle. During this lowering movement of the separation jaw pair, the label jacket, advantageously, can no longer change its height position on the bottle, so that the position of the label jacket with respect to the bottom of the bottle is maintained uniformly with great precision in the case of a multitude of bottles, that is the height position tolerances of the height of adhesion can be kept in a very small range.

Advantageously, the separation jaw pair is designed in such a manner that its coupling action, with friction lock, is simultaneously applied to the radial internal and the external surface, and, as a result, it is possible to avoid an unnecessary large widening of a label jacket to generate sufficient frictional forces.

Since, in the proposed process, a bottle is supported at all times by its circumference, before, during and after the pull-over application of a label jacket, by an area of its mantle surface, high speeds of rotation can be achieved with an accordingly high production output without tipping of the bottle.

According to an embodiment variant of the invention, the separation jaw pair is lifted into the original upper position, only after the removal transport of the bottles that have been provided

with a label jacket from a bottom dead center position, so that, advantageously, no disturbances can be caused by collision with a bottle or jamming of the separation jaws.

A particularly advantageous embodiment is one where the movements in height of the clamp jaw pair for pulling on the label jacket and for the return movement into the starting position is controlled by a cam control, but caused by a working cylinder or another appropriate drive (engine, etc.), because, as a result, the processing times, particularly the return time to the initial position, can be kept shorter than with a pure cam control, because there is no risk of self inhibition. The angle of rotation of the revolving table required for a complete cycle of movement of the clamp jaws is, accordingly, reduced, that is a smaller revolving table diameter is sufficient, with the same output level.

Other advantageous embodiments of the invention are the topic of the secondary claims.

Below, a preferred embodiment variant of the invention is explained with reference to the figures. In the drawing:

Figure 1a shows a machine with a revolving table for pull-over application of label jackets to bottles in a simplified diagrammatic top view,

Figure 1b shows a radial cam assigned to the revolving table for the actuation of gripper clamps provided on the revolving table to hold bottles, as well as star wheels to load and unload the bottles in a top view,

Figures 2a-2c show a vertical cross section through the revolving table of Figure 1 seen in the direction of the arrow A, in different operating positions,

Figures 3a-3c show a diagrammatic top view of a separation jaw pair to seize and pull over label jackets in different operating positions, corresponding to the series of Figures 2a-2c,

Figure 4 shows a vertical complete cross section through the revolving table of the machine in Figure 1,

Figure 5a shows a partial cross section of Figure 4 in an enlarged representation,

Figure 5b shows a partial cross section corresponding to Figure 5a with an additional label jacket support,

Figure 5c shows a top view of a label jacket support of Figure 5b,

Figure 6 shows a side view of a separating jaw unit in the viewing direction X in Figure 5a,

Figure 7 shows a top view of a separation jaw unit in the viewing direction Y in Figure 5a,

Figure 8 shows the development view of the radial cams for the movement in height of the separation jaw units,

Figure 9 shows a top view of a bottle seizing unit at the revolving table of the machine according to Figure 1b in two different positions, and

Figure 10 shows a variation of the machine according to Figure 1 with two revolving tables in a diagrammatic top view.

The machine 1 shown in Figure 1a essentially consists of a horizontal table top 2, on which a revolving table 3 is rotatably secured with rotation about a vertical axis 3', which revolving table is provided with several bottle dishes 4 arranged at regular intervals on a common sector of the circle. With displacement, a feed star wheel 5, with associated feeding conveyor 7, and a one-piece endless screw 8 and a delivery star wheel 6, with associated removal conveyor 9, are located on the revolving table 3, with circumferential displacement.

Both the feed start wheel 5 and the delivery star wheel 6 are equipped at their periphery with seizing devices to seize and hold bottles at their mantle surface (Figure 1b). These gripping devices, for example, with swivel clamp arms which are in opposite direction in pairs, can be controlled at different places of their circumferential path, from a gripping position into a release position. Such clamp star wheels are described in detail, for example, in US Patent No. 5607045.

Above the common transfer point I between the revolving table 3 and the feed star wheel 5, a cutting block 10 is provided on a cross bar 13, where the cutting block is held in fixed position, for the feeding, unfolding of a film hose and for cutting off label jackets E, where the label film hose 11 is pulled off a hose reservoir 12 which is secured laterally to the machine, and, in the process, it is led to the cutting block 10 over several deflection rollers. The mentioned cross beam 13 can be adjusted, in its height, for adaptation to different label jacket lengths, advantageously by an electromotor adjustment device, which is not shown in detail. The cutting block 10 can be constructed according to the Published German Patent Application DE 2950785 A1.

The revolving table 3, the star wheels 5 and 6, the conveyors 7 and 9, as well as the one-piece endless screw 8 are driven continuously with synchronous speed and positioning with respect to each other, in a circular movement, by individual motor drives or a common machine drive and drive elements. The cutting block 10 has drive devices to effect, synchronously with respect to the movement of the revolving table, the advance, with exact positioning, of the label jacket hose and the cutting off of label jackets E by the cutting tool of the block 10. Reference is made to the above mentioned German Patent Application concerning the exact construction.

The construction of the revolving table 3 is explained in greater detail below with reference to the vertical cross sectional representation shown in Figures 4 and 5a. The base of the revolving table 3 is formed by a horizontal support disk 30, which is secured, so as not to allow rotation, at its center to a vertical main shaft 31, and which bears, on its top side, the bottle dish 4 (not shown in the left half of Figure 4). Each bottle dish 4 is associated with a pair of parallel guide rods 32 in a vertical position on the top side of the carrier disk 30, which pair is located radially inside the imaginary sector of a circle, on which the bottle dishes 4 are arranged. The ends of the

guide rods 32 which are turned away from the carrier disk 30, and turned upward, bear a ring disk 33, whose middle is empty, and which is arranged parallel to the support disk 30, on which ring disk several double-action pneumatic cylinders 34 are secured in a vertical upright position, in each case in the middle between a pair of guide rods 32, with associated control valves 60. To guarantee a stable hold of the cylinders 34, the vertical upward housing ends of these cylinders are connected by a second ring disk 35, which also has an empty middle. The piston rod 36 of the double-action pneumatic cylinders 34 can be moved out, vertically and in parallel, between a pair of guide rods 32 where, in the first ring disk 33, a hole is present in each case in a position in the middle between the guide rods 32, to allow the free penetration of the piston rods 36.

The downward pointing end of the piston rod 36 is secured to slide block 37 which preferably has two parallel bore holes, each of which is penetrated by a guide rod 32, which slide block, on its back side turned toward the main shaft 31, presents an upper and lower guide roller 38 or 39. The guide rollers 38 and 39 are, in each case, rotatably secured to swiveling levers 38b or 39b (Figure 6), which in turn are secured to slide blocks 37. In the swiveling range of these levers, shock absorbers 38c and 39c, respectively, with terminal abutments are attached to the slide block.

The top guide roller 38 is applied against the control surface of an upper, cylindrically bent, radial cam 40, which is attached to the circumference of a horizontal disk 42. This disk 42 has a pipe-like attachment, which is secured with pivot bearings to the top end of the main shaft 31. At the bottom side of the disk 42, there are several separator bolts 44, which hang downward, and which are displaced at regular intervals over the circumference. At the lower ends of the separator bolts, a circular disk 43, with empty middle, is attached, which carries at its circumference a bottom radial cam 41 for the other guide rollers 39, with central attachment. In addition, the bottom radial cam 41 is held in a position so it cannot rotate by a clamp piece 45 provided on the separator bolts 44. The bottom radial cam 41, which is also cylindrically shaped, has a control surface pointed upward, on which the guide rollers 39 move.

The course of the curves of the two radial cams 40 and 41 can be seen in detail in the development view represented in Figure 8, where the running direction of the guide rollers 38,

39 is directed, starting from the 0 degree mark (see also Figure 1b), in the direction of the arrow from the right to the left. In order to be able to use the machine 1 to process different bottle types and/or jacket labels E, where the adhesion height, that is the lower margin of the label jacket with reference to the bottom of the bottle, can be different, the lower radial cam 41 has a curve section 41b (see Figure 8) whose height can be adjusted continuously, and whose control surface determines the adhesion height of the label jacket E on the bottles F. This curve section 41b is connected in each case with two slide bushes 48 which are led in a manner so they can slide on two separated separator bolts 44 and which can be lifted or lowered, continuously, by means of a threaded spindle which is not shown (Figure 4).

In order to prevent the radial cams 40 and 41 from also turning, an angular torque support 46 is attached to the top side of the disk 42, which supported is braced by a stationary column 47 arranged, outside of the revolving table 3, vertically on the table top 2.

The bottom dishes 4 which are arranged on a common circle sector of the support disk 30 at a fixed height, and which in each case are surrounded by a centering ring 14 secured by a spring method, whose coaxial height can be moved, and which presents a margin which surrounds and holds the bottle dish 4, and extends above it, and which is adapted to the contour of the bottom of the bottle. This centering ring 14 is coupled with a rod 15 which is led in a manner so it can be shifted in the support disk 30, which projects with its lower end over the bottom side of the support disk 30 and supports a guide roller 17 (Figure 5a). Below the support disk 30, at the circumferential path of the guide rollers 17, a radial cam 18 is attached in a manner so it cannot be turned on the table top 2, which, in the circumferential area from the delivery star wheel 6 to the feed star wheel 5 effects a lowering of the guide rollers 17 against the return force of a coil spring 16 with permanent vertical upward action. In this process, the upper margin of the centering ring 14 is held, during the feeding and delivery of the bottles F on the bottle dishes 4, under the top side of the bottle dishes (Figure 2c).

In addition, each bottle dish 4 is associated with two shafts 19a, 19b, which are arranged at an interval, parallel and vertically with respect to each other, with rotatable securing in the carrier disk 30. Each of these shafts supports at its top end a horizontal grip arm 20a and 20b,

respectively, which extends outward and which is secured in a manner so it can not be turned, which arms together form controllable grip pincers 20 for seizing and holding a bottle F to be labeled on a bottle dish 4 (Figure 9). At the lower end of the shaft 19a, a lever 21a fitted with a elongate hole 22 is attached, and at the lower end of the shaft 19b, a lever 21b equipped with a vertical bearing bolt 23 is attached, in a manner so they can not turn. The bearing bolt carries a sliding block 24 which can be swiveled and which penetrates into the elongate hole, and a guide roller 25 with displaced height, which roll is applied to the radial external control surface of a curve ring 26 which is maintained on the table top 2 in a manner so it can not turn. At the two levers 21a, 21b, a tension spring 27 is applied, which is permanently active in the direction of a closing movement of the gripper clamp 20. The form of the curve ring 26 which has two cam sections which project radially outward can be seen in Figure 1b. When passing this section, the guide roller 25 is pressed outward, where the grip arms 20a, 20b swivel outward in opposite directions. The different positions of a gripper clamp 20 can be seen in Figure 9.

Figure 7 shows the construction of a spreading jaw unit 50 for the friction-positive seizing and pulling over of a label jacket E on the trunk of a bottle F, for example, a PET bottle. It consists of two internal jaws 51a, 51b and the counter arms 52a, 52b associated with them. The internal jaws each have a horizontal application surface 53 for the lower margin of a label jacket and a half-shell 54 which is bent upward, and whose curvature is adapted to the bottle diameter. The following half-shell, in the direction of rotation of the revolving table 3, can have a lower height than the preceding half-shell. The counter arms, which are also curved, each carry two elastic rubber resilient pads 55 which can be applied radially from the outside to the half-shell, and which can be regulated to achieve a uniform seizing of a label jacket. On a support plate 56 which is inserted horizontally and can be quickly exchanged on the slide block 37, two vertical bearing bolts 57 for the internal jaws and two additional vertical bearing bolts 58 for the counter arms are attached, where the bearing bolts 58 freely penetrate two curved elongate holes 59 in the internal jaws. In each case, a hinge 66 is used to couple the counter arms with their corresponding internal jaw, in such a manner that the swiveling of the internal jaws toward each other results in the swiveling of the counter arms away from each other, and vice versa. Close to the half-shells, one of these attracting tension springs 61 engages with the internal jaw. Approximately in the middle between the bearing bolts 58, a control cam 68 which can not be

turned is located on a shaft 62 is secured horizontally in the slide block 37, where the height of the control cam is between the internal jaws. At the opposite end of the same shaft, a control segment 67 which presents a total of three guide rollers 63, 64, 65, is secured in a manner so it can not turn. With the two guide rollers 63, 64 which are arranged on the side of the control segment turned away from the slide block, the symmetrically shaped control cam can, as desired, be adjusted by rotation in the clockwise direction or in the opposite direction by approximately 90° by means of curve section 70 arranged at the circumferential path, while the third guide roller 65, located on the opposite side of the control segment, is used to maintain the label holding position of the spreading jaw unit 50, while its downward movement is used for the pull-over application on a bottle. For this purpose, this guide roller 65 is associated with a vertical longitudinal guidance strip 71, which rotates with the revolving table 3, and where the guide roller runs along this guidance strip during the lowering.

In contrast to the above described embodiment, the counter arms, if appropriately shaped—as shown in Figure 1b—can each be secured with one end rigidly to the diametrically opposite internal jaw.

The course of the operation during the passage of a bottle through the machine is described below, essentially with reference to Figure 1a:

A bottle F which arrives on the conveyor 7 is seized by the one-piece endless screw 8, introduced in an appropriate position into the feed star wheel 5, seized by the latter's controlled clamps and positioned at the common contact point I on a bottle dish 4 of the revolving table 3, where, at the same time, the centering ring 14 is led upward and the associated gripper clamp 20 is closed. The corresponding clamp of the feed star wheel instantaneously releases the bottle.

At the same time, a spreading jaw unit 50 which is associated with the bottle approaches the cutting block 10 as a result of its upward movement, where the half-shells 54 and the rubber resilient pad 55 are separated from each other at this time. At the same time, the label hose 11 is advanced from above downward, and a label jacket E is cut off, which is then located, with its lower margin, on the application surface 53 of the internal jaws 51a, 51b, that is the half-shells



are located within the label jacket and the rubber resilient pad outside. In order to prevent the tipping of the label jacket at the time of the uptake and acceleration in the direction of rotation of the revolving table 3, a concave curved support shell 49 is located at the height of the label jacket E which has just been separated from the hose, which shell moves in the same direction as the revolving table—seen in the direction of rotation--and is applied to the back side of the label, where the support shell 49 is secured with fixed height at the radial external margin of the ring disk 33 by means of a bracket (Figure 5b). Figure 5c shows the shape of the support shell 49 in a top view.

Immediately thereafter, the shaft 62 with its control cam 68 is rotated in such a manner that the half-shells 54 are swiveled away from each other and at the same time the rubber resilient pads 55 are swiveled inward and in opposite directions, until the label jacket is clamped at its lower margin, outside and inside, with friction lock. In the case of a stretchable jacket, the latter is expanded in the process to an extent which is larger than the diameter of the bottle.

When passing through sector II (Figure 1a), the label jacket is pulled, by the separation jaw unit 50 which is pressed downward by the pneumatic cylinder 34, from top to bottom over a bottle F. As soon as the spreading jaw unit, during the lowering movement, approaches the gripper clamp 20 which holds the bottle, the gripper clamp is opened for a short time, long enough so that the spreading jaws are able to pass through the gripper clamp (second half in sector II). Later, the gripper clamp 20 can again be closed, to such an extent that the bottle is led by its circumference, but a sufficient slit remains to continue pulling through the label jacket. As soon as the label jacket has reached the intended adhesion height, the lifting movement of the spreading jaws is stopped, the gripper clamp 20 is completely closed (label pressed against the bottle trunk) and the half-shells 54 are swiveled slightly inward (the clamping of the lower label margin is released). These processes occur in sector III.

Even before the delivery star wheel 6 is reached, the spreading jaw unit 50 is now again lowered, until the half-shells are located completely under the bottle dishes 4 (Figure 2c). In the case of a shrink wrap jacket, the preliminary shrinking (hot air, etc.) for affixing the label can now occur

at the revolving table 3. In addition, the centering ring 14 is lowered now, and the gripper clamp 20 is opened, when the delivery star wheel 6 has seized the bottle for transfer to the conveyor 9.

Then, the pneumatic cylinder 34 is adjusted for lifting, so that the spreading jaw unit 50 again reaches its original upper position before passing the feed star wheel 5 (sector IV).

During the entire treatment process, the bottles are transported without change in height position through the machine.

Figure 10 represents a machine variant for high outputs, which is formed by a mirrored arrangement of two individual machines according to Figures 1a or 1b, that is this double machine has two feed star wheels 5 and 5', two carousels or revolving tables 3 and 3', as well as two delivery star wheels 6 and 6', but only one common conveyor 7, one removing conveyor 9 and the one-piece endless screw 8. The star wheels 5, 5' or 6, 6', respectively, which are opposite each other and which can be driven in opposite directions to each other, in each case contact the sector of a circle of their counter part and they are equipped, at the circumference, with controllable clamps—according to the representation in Figure 1b—which can be adjusted selectively from a seize position for seizing a bottle into a release position, and vice versa, by means of switch cams, not shown, which are arranged in a fixed position at certain places of their circumferential path. This partition measure, that is the interval between two adjacent bottle dishes 4 on the two revolving tables 3 and 3', is twice that of the partition measure of the feed and delivery star wheels 5, 5' and 6, 6'. All the bottles which are supplied continuously in a single track by the feed conveyor 7 are pulled apart by the one-piece endless screw 8 to the partition measure of the feed star wheel 5 and seized by the latter. At the common contact point of the two feed star wheels 5 and 5' each second bottle F is released by the first feed star wheel 5 and simultaneously seized by the second feed star wheel 5'. In this manner, the bottles F and F' are alternately led to the two revolving tables 3 and 3'. Each revolving table is associated in the transfer area of its feed star wheel with a cutting block 10 or 10' for the separation of label jackets E from a label film hose. On the side of the delivery, the finished, labeled, bottles F and F', which arrive alternately from the two revolving tables 3 and 3' at the common contact point of the two delivery star wheels 6 and 6', are again combined to one row and they are transferred



### Claims

1. Process for attaching a label jacket to objects, such as bottles or similar items, where a label jacket is seized by a separating jaw unit by its forward margin and pulled in axial direction over an object, characterized in that the object, prior to the pull-over application, is held by the area of its mantle surface, by positive and/or friction lock, the pull-over process is initiated, the holding device on the mantle surface is temporarily released as soon as the separating jaw unit at least partially surrounds the object over its mantle surface, and, at the latest when the desired adhesion height of the label jacket on the object has been reached, the latter object is again seized by area of its mantle surface, which is now covered with the label, and as a result the label becomes affixed in a manner so it cannot slip, while the separating jaw unit is pulled off.

2. Process according to Claim 1, characterized in that the hold on the mantle surface of the object occurs at a certain height position, first with positive and/or friction lock, as soon as the forward margin of the label jacket approaches this height position, the holding device is then briefly released with simultaneous axial support of the object, and after the passage of the height position, the object is held in such a manner that the label jacket can then continue to be pulled over axially with respect to the object until the adhesion height is reached.

3. Process according to Claim 1 or 2, characterized in that the hold of the object occurs at two places of its mantle surface with separation intervals in the axial direction, and the two axially displaced holding devices, during the pull-over application of the label jacket, can alternately be controlled to rise, in such a manner that the object is at all times subject to or guided by at least one holding device.

4. Process according to at least one of the preceding claims, characterized in that the holding device of the object during the axial pull-over application of the label jacket is controlled as a function of the operating movement of the spreading jaw unit and/or the transport movement of the object.

5. Process according to at least one of Claims 1-4, characterized in that the label jacket consists of a stretchable film hose material with smaller internal diameter than the external diameter of the object, in that, before the pulling over, it is elastically extended, at least at its forward margin advancing in the axial direction, by the spreading jaw to a value in excess of the external diameter, and the extension is released after the adhesion height has been reached.

6. Process according to at least one of Claims 1-4, characterized in that the label jacket consists of a film hose material which is shrinkable when exposed to heat, which has an internal diameter which is equal to or larger than the external diameter of the object and which, after the adhesion height has been reached, is at least partially shrink wrapped on the object, before the holding device of the label jacket and of the object is released.

7. Process according to Claim 6, characterized in that, after the release of the holding device, a complete shrink wrapping occurs.

8. Process according to at least one of Claims 1-7, characterized in that the object, at least during the pull-over application of the label jacket, is continuously transported, preferably in a circular path.

9. Device for the attachment of a label jacket (E) to objects (F), such as bottles or similar items, with at least one spreading jaw unit (50) for seizing the label jacket at its forward margin and axial pull-over application of the label jacket by means of the spreading jaw unit onto an object, particularly for using the process according to Claim 1, characterized in that the spreading jaw unit (50) is associated with a controllable holding device (20) for seizing the object (F), with positive and/or friction lock, in the area of its mantle surface.

10. Device according to Claim 9, characterized in that at least one spreading jaw unit (50) and at least one holding device (20) are associated with a continuously drivable conveyor (3) for transporting the object (F), and in that they are moved synchronously with the latter.

11. Device according to Claim 9 or 10, characterized in that the holding device (20) seizes, after the pull-over application of the label jacket (E), the area of the mantle surface of the object (F) that has been covered, in the case of bottles preferably in the middle section, particularly in the section having the largest external diameter.

12. Device according to one of Claims 9-11, characterized in that the holding device (20) is constructed in the form of a clamp having two arms (20a, 20b) which can be moved in opposite directions.

13. Device according to Claim 12, characterized in that the arms (20a, 20b) are appropriately adapted in their shape to the external contour of the object (F), matching the area that is seized, and they preferably have a non-slip surface.

14. Device according to Claim 12 or 13, characterized in that the clamp (20) is associated, as a function of the direction of movement of the spreading jaw unit (50) and/or the transport direction of the object (F), with a controllable actuation device (21-26).

15. Device according to one of Claims 12-14, characterized in that the clamp (20) can be moved from a release position to a seize position, and vice versa, where it is preferred that the seize position is automatically controlled, and the release position is controlled by the actuation device (21-26).

16. Device according to Claim 15, characterized in that the actuation device (21-26) is constructed in such a manner that two different seize positions are possible, where, in a position between the object (F) and the clamp (20), a slit remains for pulling the label jacket (E) through, and in the other position, the clamp (20) is applied, without tolerance, preferably with a defined force of application, to the object (F) or the label jacket (E).

17. Device according to at least one of Claims 12-16, characterized in that each arm (20a, 20b) of the clamp (20) is secured to its own shaft (19a, 19b), which is vertical with respect to the plane

of transport, and these shafts (19a, 19b) are separated from each other by an interval, which allows the free penetration of the spreading jaw unit (50).

18. Device according to at least one of Claims 9-17, characterized in that the spreading jaw unit (50) is secured vertically with respect to the plane of transport of the objects (F), in such a manner that it can be moved alternately in opposite directions, particularly by means of a reversible double-action cylinder (34), and the operating movements are controlled, at least during some periods, by at least one radial cam (40, 41, 41b).

19. Device according to at least one of Claims 10-18, characterized in that the conveyor (3) is a carousel-like revolving table, which can preferably be rotated about a vertical axis (30'), with several placement surfaces (4), which are evenly separated, for the objects (F), and each placement surface is associated with a liftable and lowerable spreading jaw unit (50) and a clamp (20), where a vertical guide (32), which takes up the spreading jaw unit (50), and arms (20a, 20b) of the clamp (20) bearing shafts (19a, 19b) are preferably arranged on the radially internal side of the circumferential path of the placement surfaces (4).

20. Device according to Claim 19, characterized in that the placement surfaces (4) are associated with controlled liftable and lowerable centering elements (14), particularly rings, and/or the top side of the placement surface is correspondingly adapted in its shape to the contour of the standing surface of the objects (F).

21. Device according to Claim 19 or 20, [characterized in] that the revolving table (3) is associated with a feed star wheel (5) and a delivery star wheel (6) with controllable grip elements to feed and deliver the objects (F), and the spreading jaw units (50) are raised, in the circumferential area from the delivery star wheel to the feed star wheel, from a bottom dead center position into the direction of a top dead center position.

22. Device according to at least one of Claims 9-21, characterized in that the spreading jaw unit (50) is constructed in the form of a nipper, preferably with two internal jaws (51a, 51b), which can be swiveled horizontally in opposite directions in a controlled manner, and which has a

application surface (53) for the forward margin of a label jacket (E), and which has two counter arms (52a, 52b), which are associated with the internal jaws, and which can be swiveled in opposite directions either towards each other or towards the internal jaws, where the internal jaws can be brought in contact with friction lock with the internal side and the counter arms with the external side of a label jacket.

23. Device according to Claim 22, characterized in that the spreading jaw unit (50), which can be actuated by means of control elements (70) which are secured to the circumferential path of these spreading jaw units, can be moved by a peripheral cam (68) that can be swiveled, as desired, from a ready position into the spread position or vice versa.

24. Device according to one of Claims 19-23, characterized in that two revolving tables (3, 3') are connected in parallel and they are supplied with a common, one-track feeding stream of objects, which is divided over two revolving tables and which is again combined, behind the revolving tables, to a one-track row.



ABSTRACT

The invention concerns a process and a device for attaching a label jacket to objects, such as bottles or similar items, where a jacket label is seized by its forward margin by a spreading jaw unit and pulled in axial direction over the object, where the object, before the pull-over application, is held by the area of its mantle surface, by positive and/or friction lock, the pull-over process is started, the holding device on the mantle surface is temporarily released as soon as the spreading jaw unit at least partially surrounds the object at its mantle surface, and, at the latest before the desired adhesion height of the label jacket on the object is reached, the latter objects is again seized by the area of its mantle surface, which is now covered with the label, and in the process the label is affixed in a non-slip manner, while the spreading jaw unit is pulled off.

0970493-04504

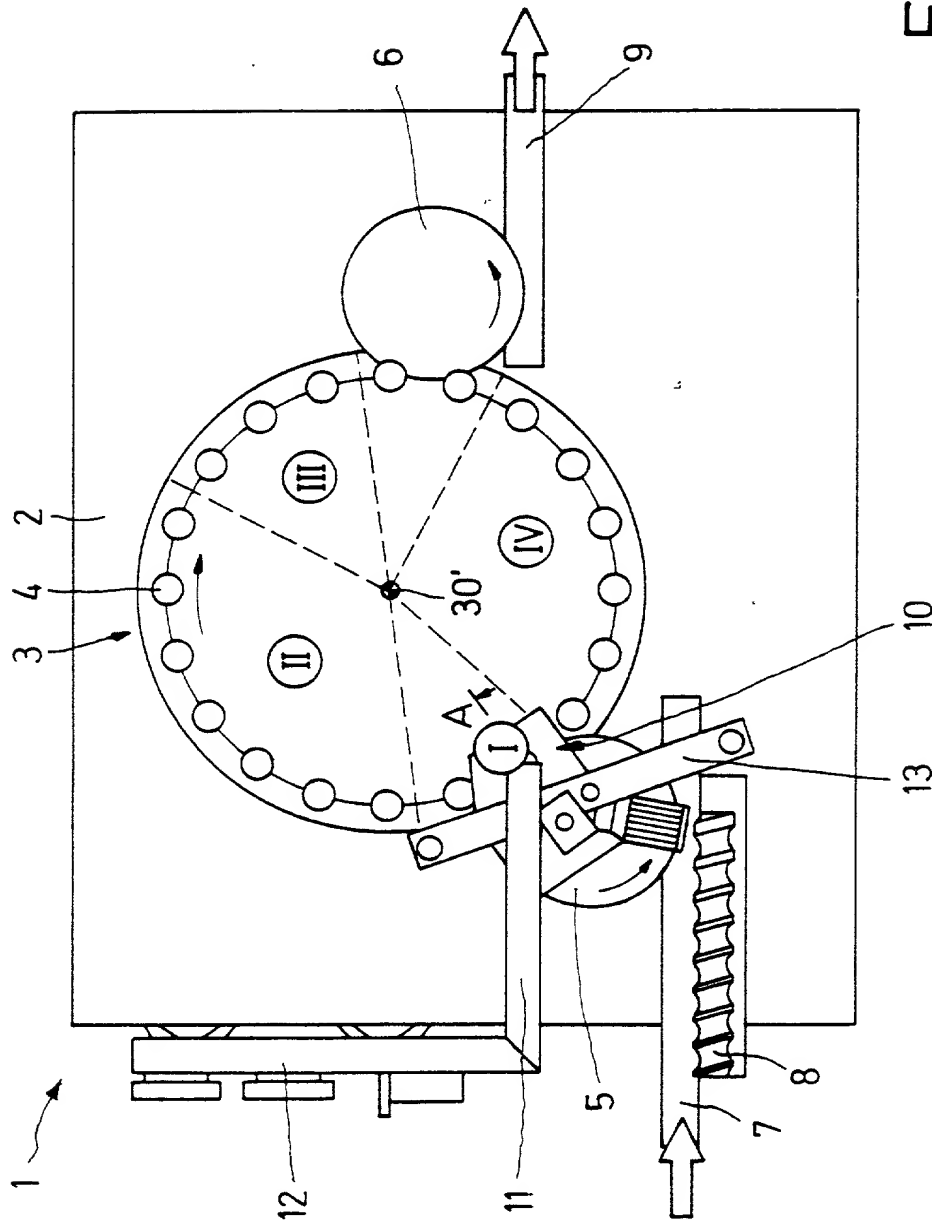
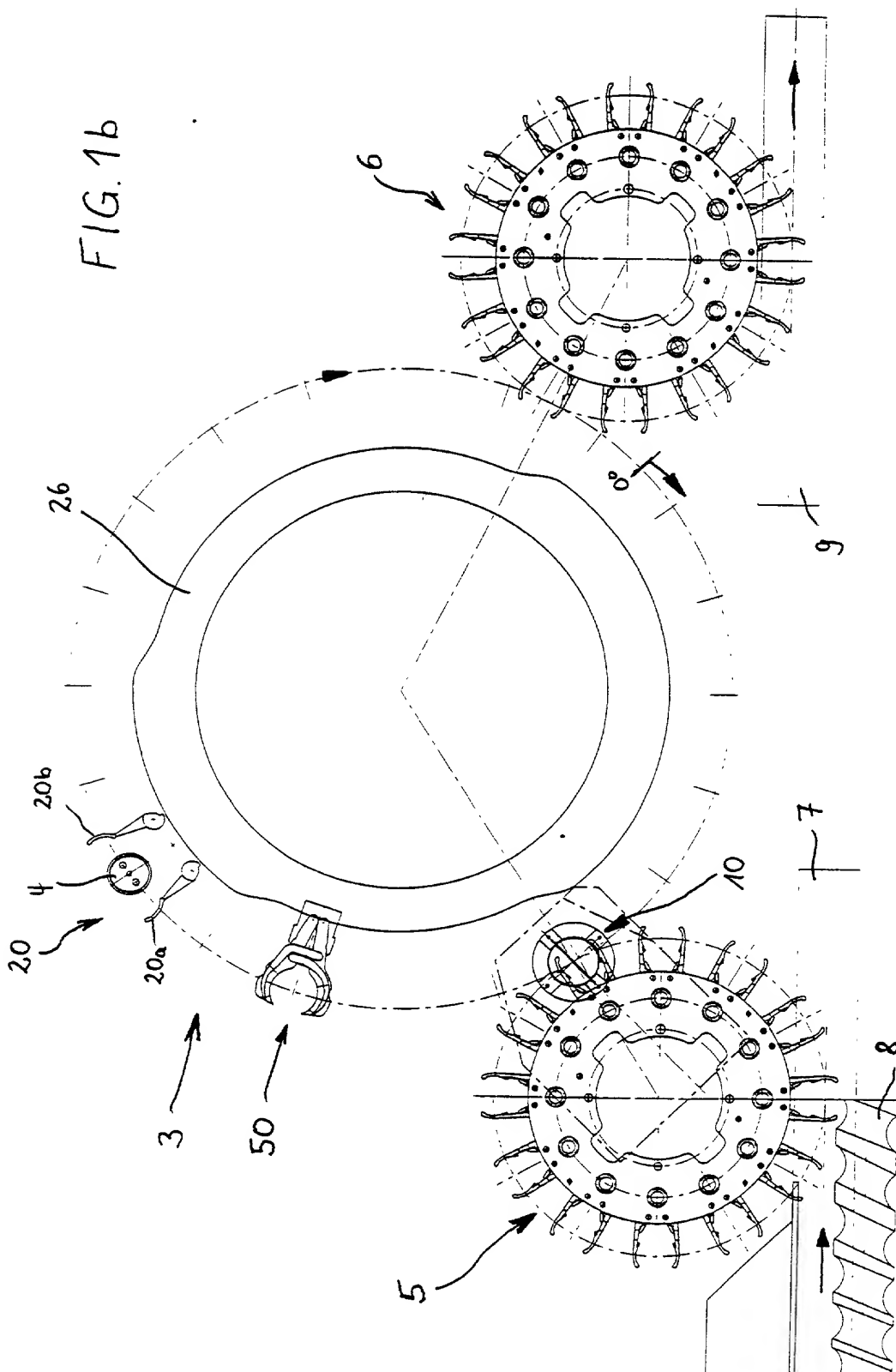
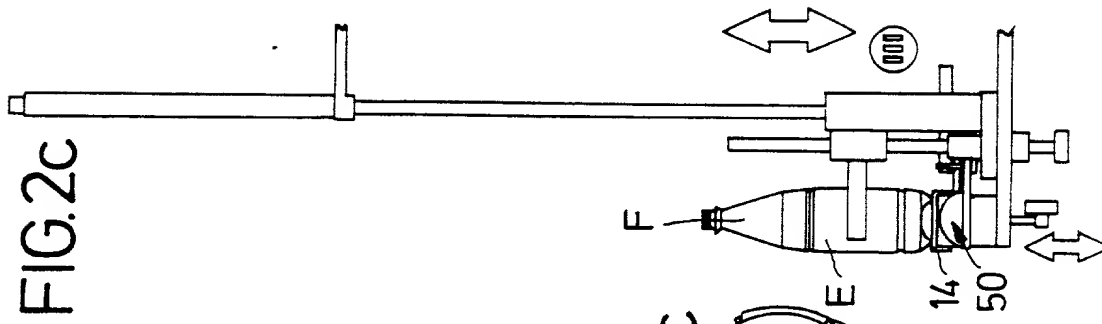
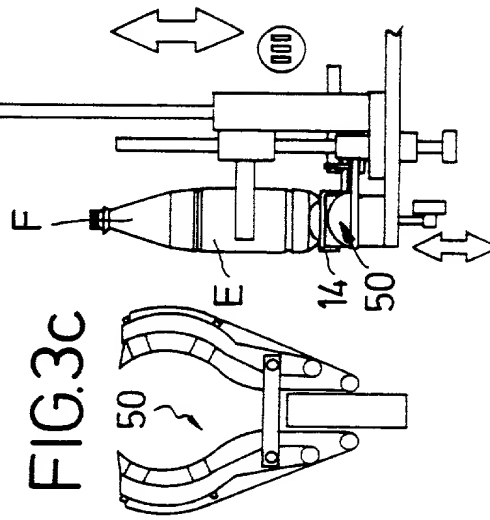
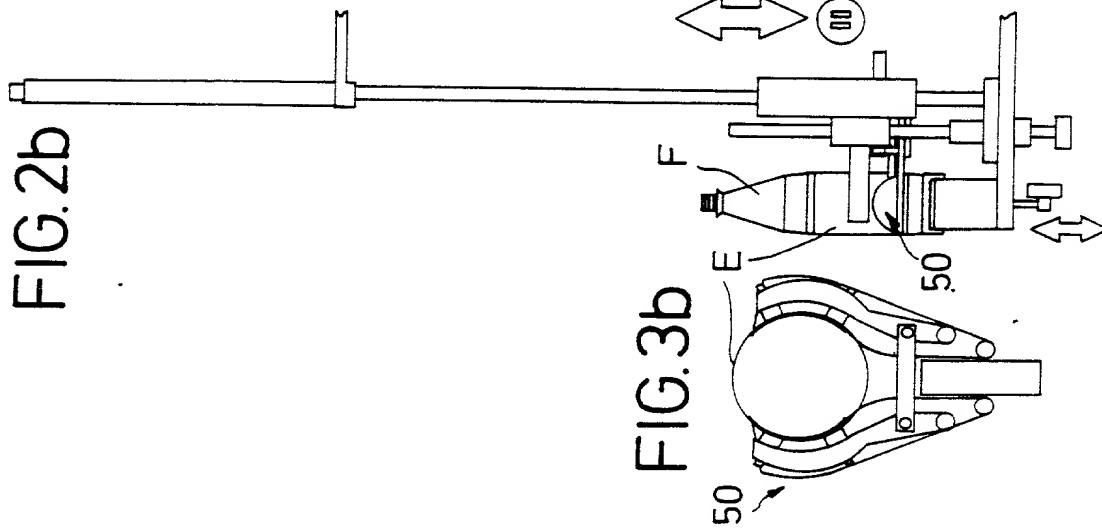
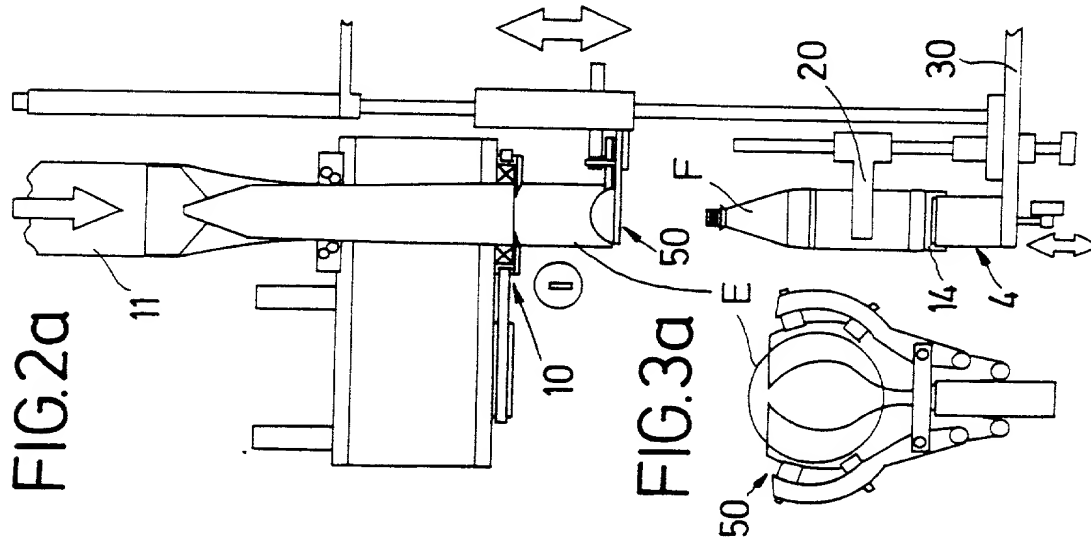


FIG. 1a

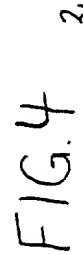
FIG. 1b



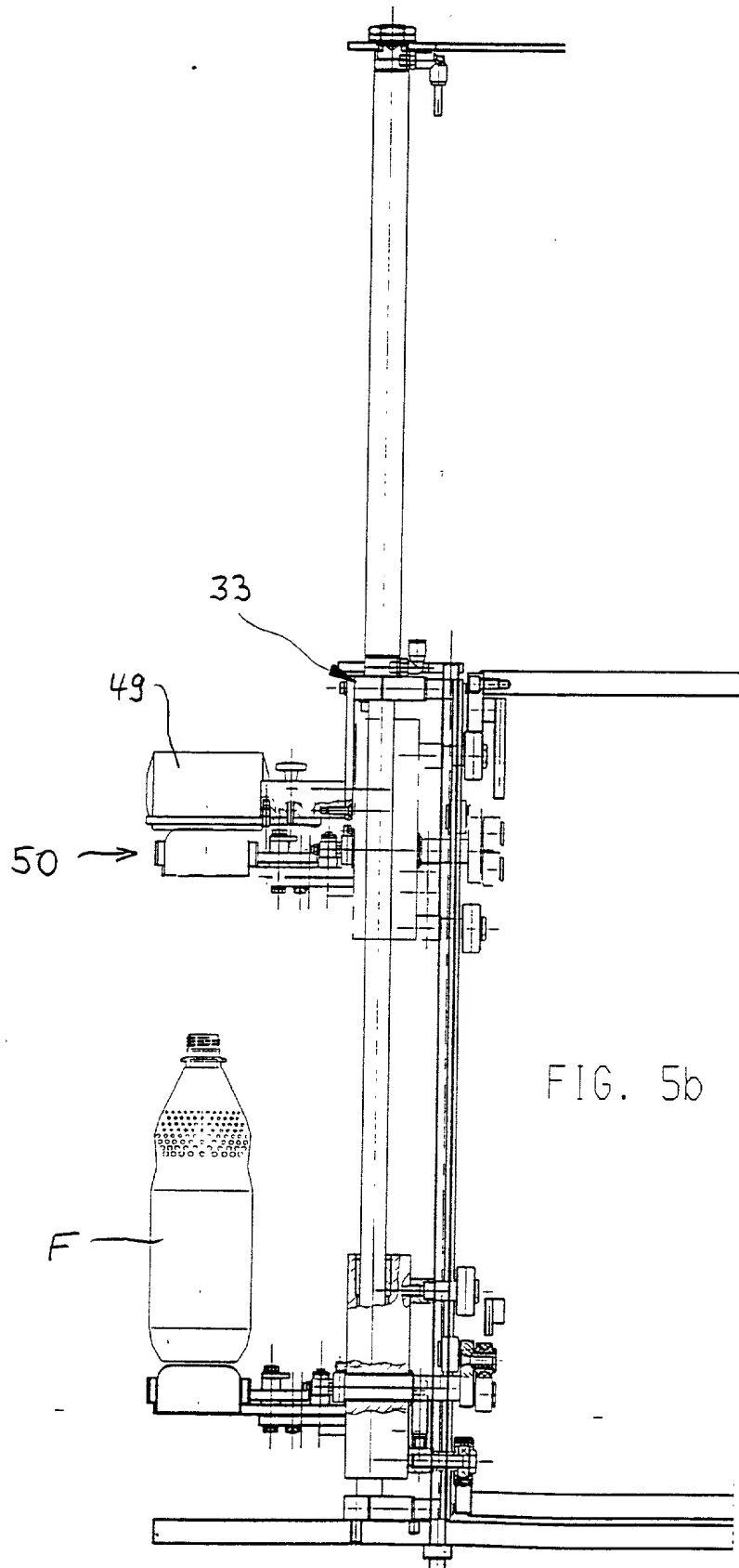
09/701927







09/701927



09/701927

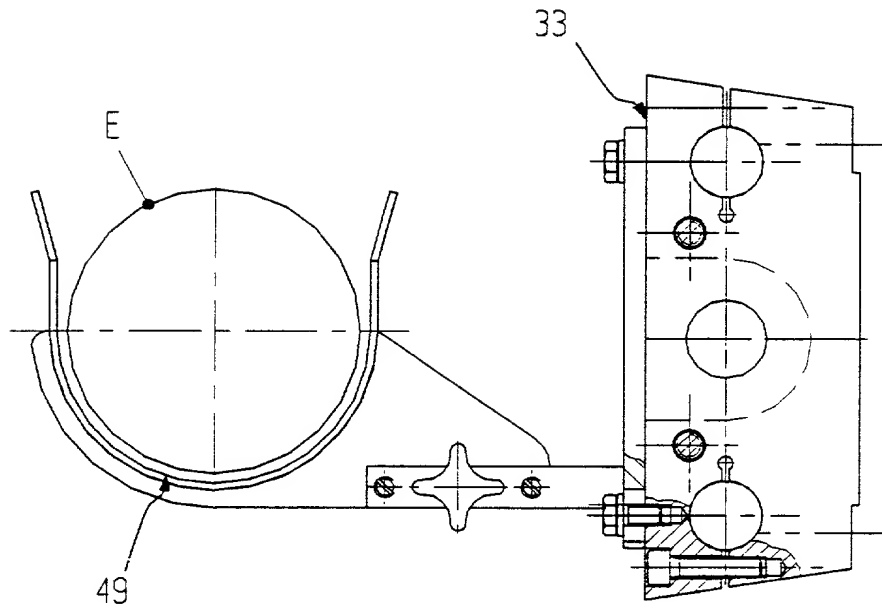


FIG. 5c

FIG. 5c



09/701927

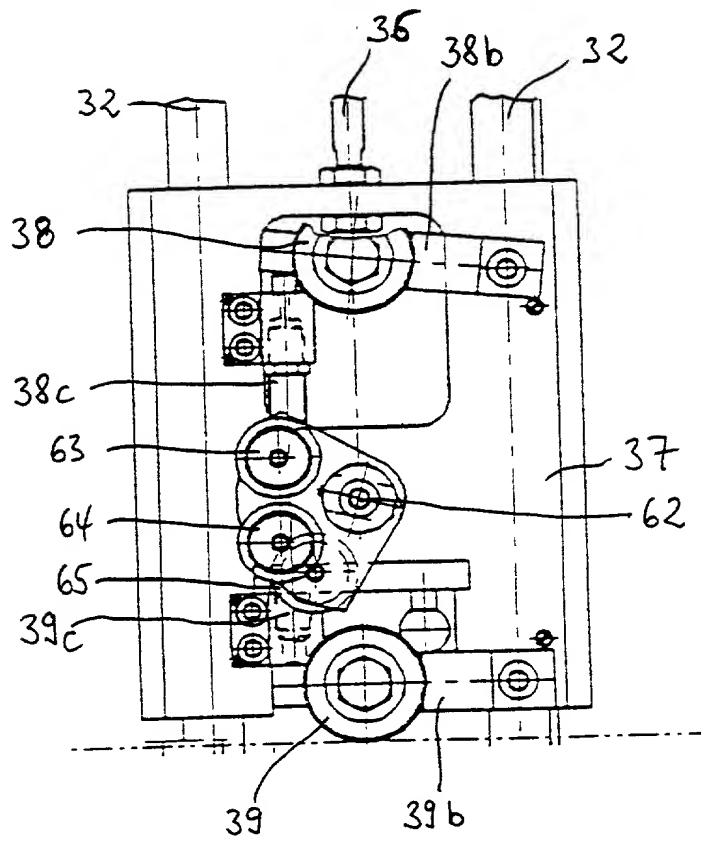


FIG. 6

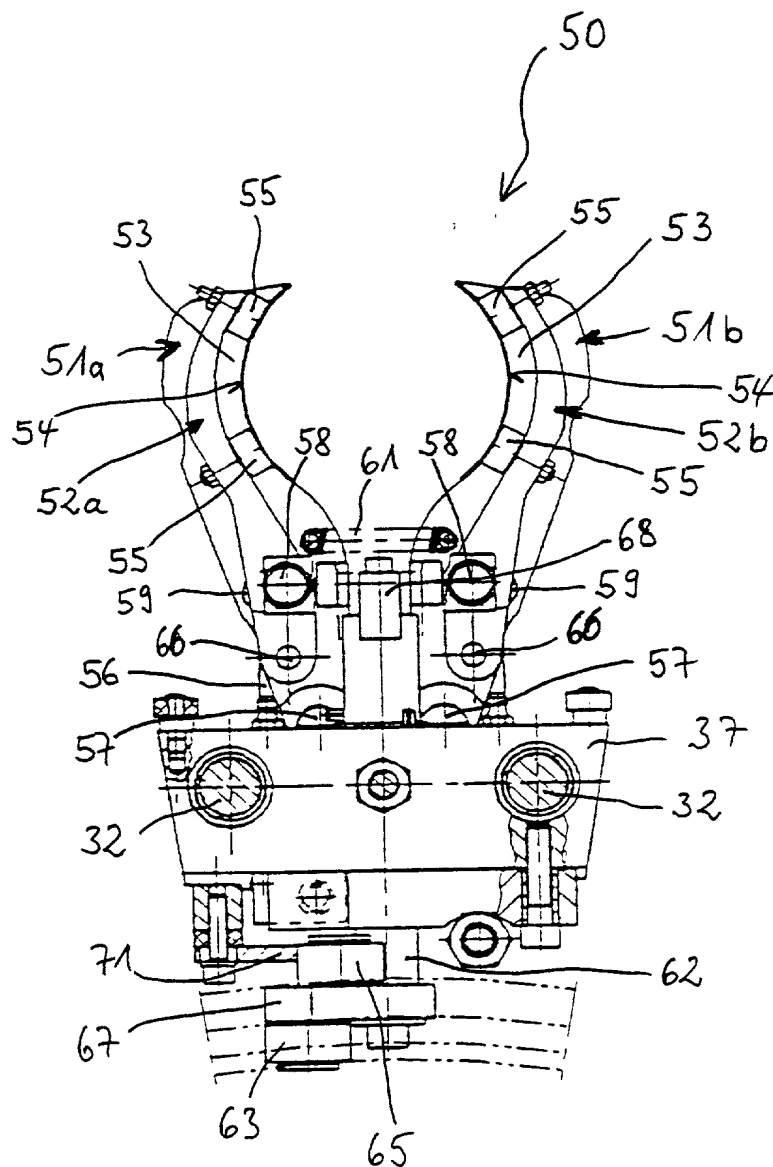


FIG. 7

09/701927

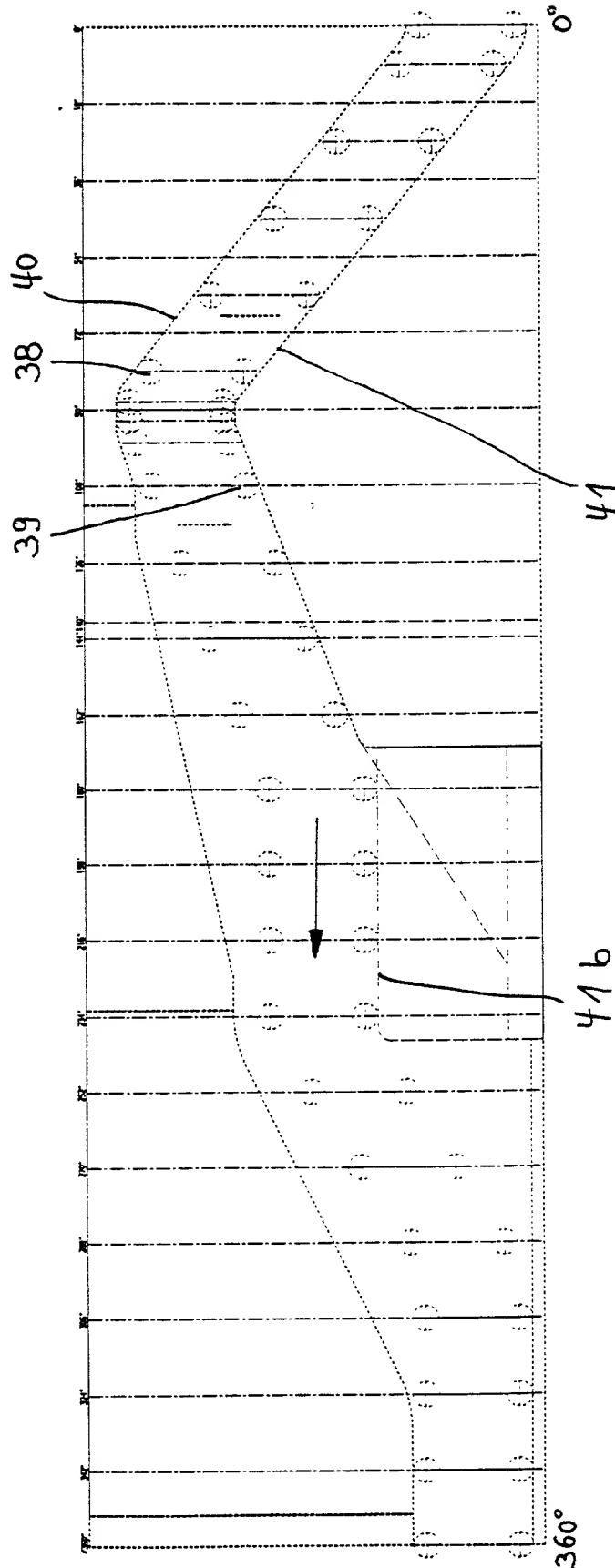
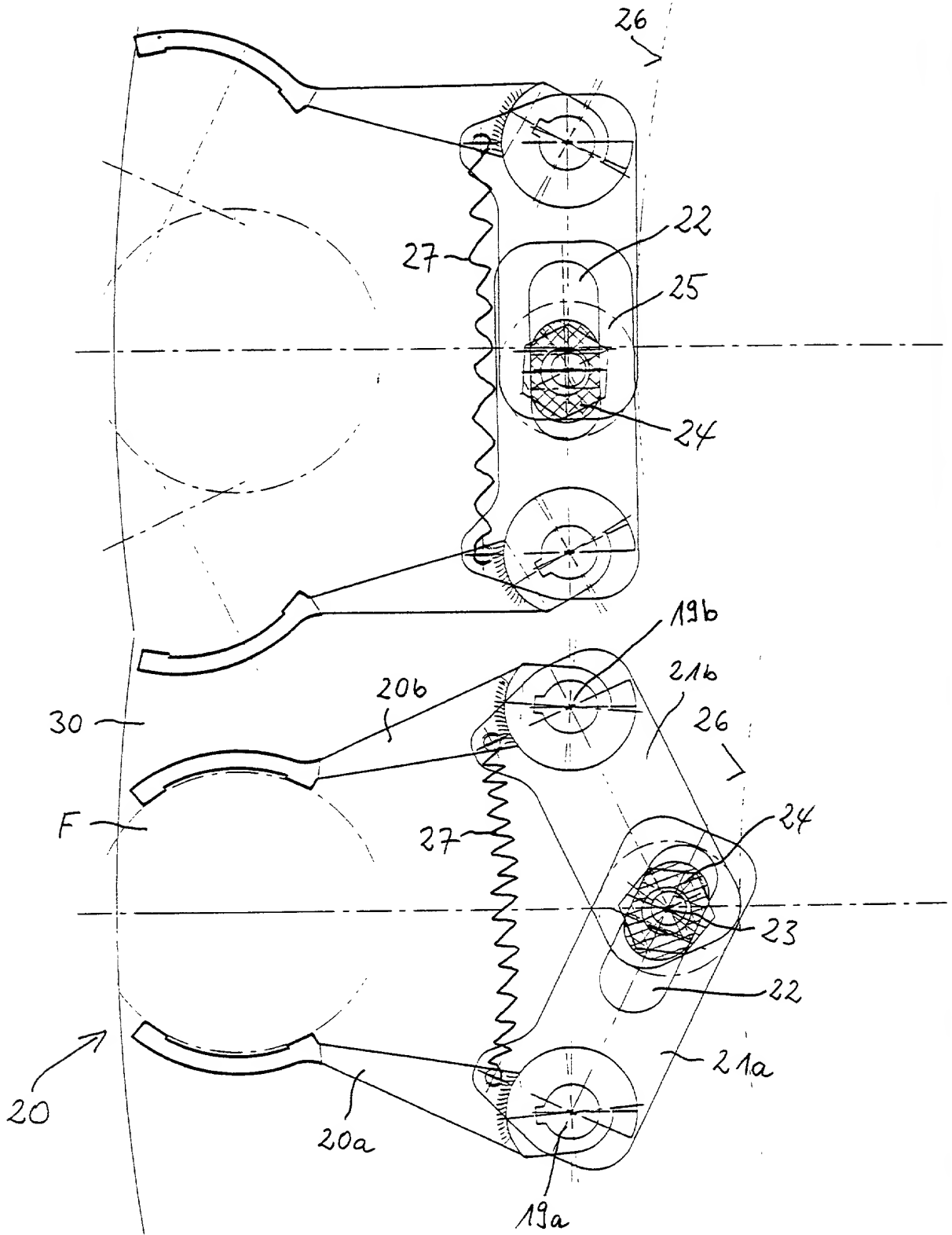


FIG. 8

09/701927



09/701927

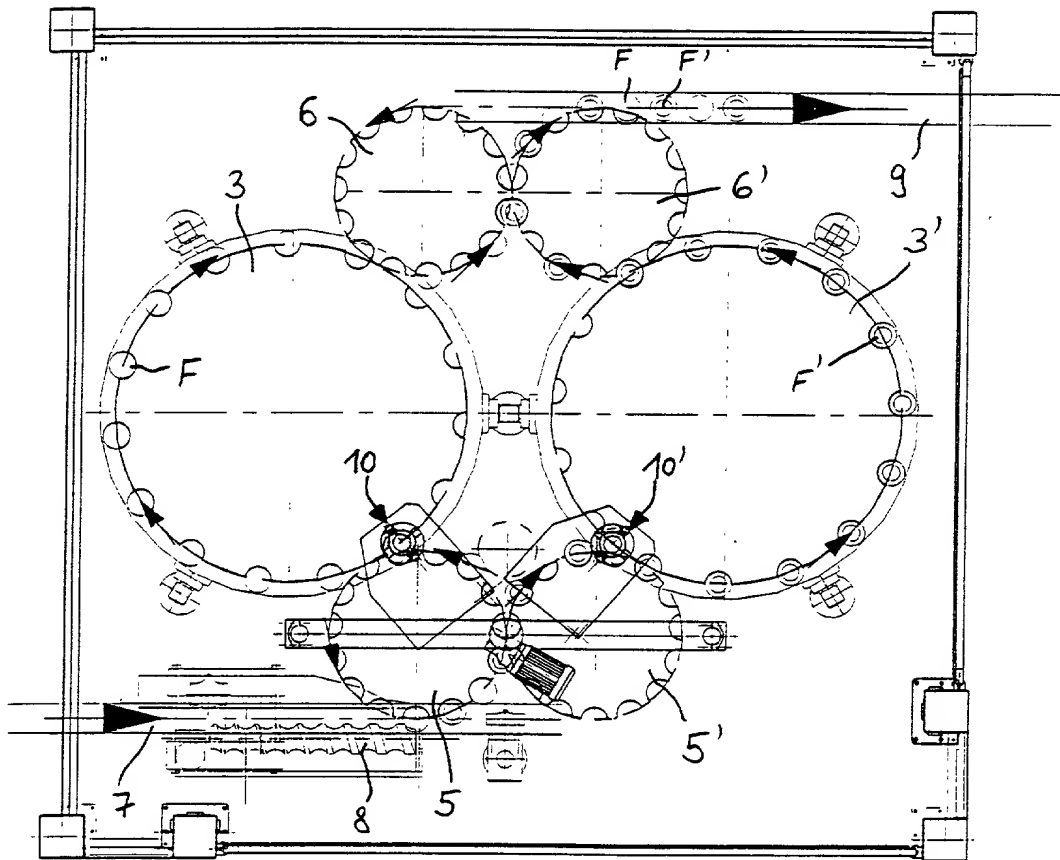


FIG. 10



Please type a plus sign (+) inside this box → ☐

Approved for use through 9/30/00. OMB 0651-0032  
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

<b>DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)</b>  <input checked="" type="checkbox"/> Declaration Submitted with Initial Filing      OR <input type="checkbox"/> Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)	Attorney Docket Number	802
	First Named Inventor	Eiban Gunter et al
	<b>COMPLETE IF KNOWN</b>	
	Application Number	/
	Filing Date	
	Group Art Unit	
	Examiner Name	

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**A PROCESS AND DEVICE FOR ATTACHING  
LABEL JACKETS TO OBJECTS**

the specification of which  
☒ is attached hereto  
OR  
☐ was filed on (MM/DD/YYYY) [ ] as United States Application Number or PCT International  
Application Number [ ] and was amended on (MM/DD/YYYY) [ ] (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
199 19 880.2	Germany	4/30/99	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
199 20 905.7	Germany	5/6/99	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
100 02 401.7	Germany	1/20/99	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)

☐ Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

[Page 1 of 2]

Burden Hour Statement: This form is estimated to take 0.4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



Please type a plus sign (+) inside this box → ☐

PTO/SB/01 (12-97)  
Approved for use through 9/30/00. OMB 0651-0032  
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

## DECLARATION — Utility or Design Patent Application

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)
PCT/EP00/03872	4/28/00	

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

<input type="checkbox"/> Customer Number OR <input checked="" type="checkbox"/> Registered practitioner(s) name/registration number listed below	<div>Place Customer Number Bar Code Label here</div>		
Name	Registration Number	Name	Registration Number
John B. Lungmus	18,566	Jeremy R. Kriegel	39,257
John W. Chestnut	24,096		
Richard B. Hoffman	26,910		

☐ Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

Direct all correspondence to: ☐ Customer Number or Bar Code Label ☒ Correspondence address below

Name	Richard B. Hoffman		
Address	Tilton, Fallon, Lungmus & Chestnut		
Address	100 South Wacker Drive, Suite 960		
City	Chicago	State	IL
ZIP	60606		
Country	USA	Telephone	312/456-8000
Fax	312/456-7776		

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:	Eiban Gunter	<input type="checkbox"/> A petition has been filed for this unsigned inventor
Given Name (first and middle (if any))	Eiban	Family Name or Surname
Inventor's Signature		Date
Residence: City	Regensburg	State
Country	Germany	Citizenship
Post Office Address	Enzianweg 17	
City	Regensburg	State
ZIP	D-93053	Country
Germany		

☐ Additional inventors are being named on the \_\_\_\_\_ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto

Please type a plus sign (+) inside this box → ☐

PTO/SB/02A (3-97)  
 Approved for use through 9/30/98. OMB 0651-0032  
 Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

**DECLARATION**

**ADDITIONAL INVENTOR(S)**  
**Supplemental Sheet**  
 Page 3 of 3

**Name of Additional Joint Inventor, if any:**☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])

Family Name or Surname

HermannEnglbrechtInventor's  
SignatureHermann Englbrecht

Date

12/22/2000

Residence: City

Alteglofsheim

State

Country

Germany

Citizenship

German

Post Office Address

Schutzenring 32

Post Office Address

City

Alteglofsheim

State

ZIP

D-93087

Country

Germany**Name of Additional Joint Inventor, if any:**☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])

Family Name or Surname

ErichEderInventor's  
SignatureErich Eder

Date

12/22/2000

Residence: City

Donaustauf

State

Country

Germany

Citizenship

German

Post Office Address

Goethe-Strabe 6

Post Office Address

City

Donaustauf

State

ZIP

3-93093

Country

Germany**Name of Additional Joint Inventor, if any:**☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])

Family Name or Surname

Inventor's  
Signature

Date

Residence: City

State

Country

Citizenship

Post Office Address

Post Office Address

City

State

ZIP

Country

Burden Hour Statement: This form is estimated to take 0.4 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.